

Soil Beneath Historic Landmark, The American Royal, Erodes and Concrete Slab Floor Becomes Uneven



PROBLEM

Kansas City, Missouri's historic American Royal got its start way back in 1899 and today draws more than 250,000 people over an annual eight-week season of barbecue contests, rodeos, livestock shows, equestrian events and agricultural activities benefiting youth and education. The 14-acre complex's buildings, though, have a problem common to the confluence of the Missouri and Kansas rivers—the soil beneath them erodes and concrete slab floors become uneven.

The land on which American Royal stands is an ancient riverbed, or channel for retreating glacial melt and contains thick limestone, channel sandstone, and shale. While the mix is a solid, stable base, sometimes the supporting geology shifts and presents challenges for concrete sidewalks and slab floors.

The floor of Governor's Exposition Hall began shifting back in 1980s and the only remedy was to fill the voids beneath it with asphalt, and eventually to apply asphalt over the slab for a level surface. Finally last year the American Royal management was faced with a tough choice—find a better, more permanent solution or tear up the entire floor and replace it.

SOLUTION

They chose NCFI Polyurethane's Terra Thane™ Geotechnical Polyurethane Systems. Joe Morgan of Pro Foundations got to work "foamjacking"—a relatively new term based on the legacy method of "mudjacking" in

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which a slurry, or grout, of water, dirt and cement is pumped under a concrete slab to lift it to its original level position. Foamjacking uses TerraThane™ foam instead of the mud slurry. TerraThane™ foam is lighter than mud so it doesn't overburden the soil, yet more structurally dense so it handles heavier loads.

RESULTS

"SPF is an ideal product for void filling and concrete lifting," says Morgan. "We use the specially formulated, dense foam system made by one of the U.S.'s oldest and most trusted foam houses, NCFI Polyurethanes. We removed the asphalt and drilled small holes in the slabs, pumped the two-part Terra Thane™ foam into the holes to fill the voids—some larger than 36"—then raised the slabs to level." Dean Barrett, deputy director at Kansas City's Department of Convention and Entertainment Centers, says the city is pleased with the successful results of the December 2011 work. "We've got a level floor and it saved us millions of dollars. We'll be using it again for other projects here at American Royal."

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